



1           4. The power converter apparatus of claim 2 wherein  
2 said coupling is achieved without a permeable core linking  
3 said windings.

1           5. The power converter apparatus of claim 2 further  
2 comprising a permeable core linking said windings.

1           6. The power converter apparatus of claim 2 wherein  
2 said windings are formed on surfaces of separate circuit  
3 boards.

1           7. The power converter apparatus of claim 1 wherein  
2 said first and second circuit assemblies are enclosed  
3 respectively in mechanically separate protective housings.

1           8. The power converter apparatus of claim 7 wherein  
2 said protective housing comprises a dielectric encapsulant.

1           9. The power converter apparatus of claim 8 wherein  
2 the housings of the two assemblies meet at respective mating  
3 surfaces and coupling occurs across the mating surfaces.

1           10. The power converter apparatus of claim 9  
2 wherein the coupling is electromagnetic.

1           11. The power converter apparatus of claim 1  
2 further comprising a circuit board, power conversion  
3 components being mounted on said circuit board, said  
4 assemblies also being mounted on said circuit board.

1           12. Power converter apparatus comprising  
 2           a transformer having galvanically isolated windings  
 3 defining a primary side and a secondary side of said power  
 4 converter,  
 5           a switch for coupling power from a source on the  
 6 primary side via the transformer to a load on the secondary  
 7 side,  
 8           a primary-side circuit assembly galvanically coupled  
 9 to a port for connection to an input power source, and  
 10 having a primary-side winding formed on a printed circuit  
 11 board,  
 12           a secondary-side circuit assembly galvanically  
 13 coupled to a port for connection to a load, and having a secondary-  
 14 side winding formed on a second printed circuit board,  
 15           the first and second circuit assemblies being  
 16 separately encapsulated in mechanically separable housings  
 17 having mating surfaces, the assemblies being galvanically  
 18 isolated from one another, the housings being configured to  
 19 be held together with the surfaces mating to enable said primary-  
 20 side and secondary-side windings to cooperate to pass said  
 21 control information across the mating surfaces.

1           13. A power converter control circuit apparatus  
 2 comprising  
 3           first circuitry encapsulated to form a first  
 4 discrete physical unit and connected to respond to control  
 5 information received from second circuitry encapsulated in a  
 6 second discrete physical unit,  
 7           the two physical units respectively including  
 8 subparts of a device for conveying said control information  
 9 via a galvanically isolated electromagnetic path.

007453-42400

1           14. A method of providing control circuitry for use  
2 in manufacturing individual power converters in a mode in  
3 which the individual power converters all conform to a  
4 single general design, and different ones of the power  
5 converters have different operating characteristics achieved  
6 by different components used within the single general  
7 design, the method comprising

8           providing supplies of different versions of a first  
9 discrete control circuit, said first discrete control  
10 circuit including a primary-side communicator for sending or  
11 receiving control information used in controlling operation  
12 of said power converter,

13           providing supplies of different versions of a second  
14 discrete control circuit, said second discrete control  
15 circuit including a secondary-side communicator for sending  
16 or receiving said control information,

17           said first and second circuit assemblies being of  
18 the kind which are mechanically separable from one another,  
19 galvanically isolated from one another, and configured to be  
20 placed in positions relative to one another to enable said  
21 primary-side and secondary-side communicators to cooperate  
22 to pass said control information, and

23           for each of the individual power converters being  
24 manufactured, selecting different versions of the first and  
25 second control circuits to achieve desired operating  
26 characteristics in the power converters, and

27           incorporating the selected different versions into  
28 each converter in orientations which permit them to  
29 communicate control information between them to achieve the  
30 desired operating characteristics.

00727-EST-200

1 15. A power converter comprising  
2 a primary circuit assembly including a primary  
3 winding of a power conversion transformer, a switch for  
4 influencing the coupling of power from an input port of the  
5 primary assembly to the primary winding, and primary side  
6 control circuitry for opening and closing the switch,  
7 a secondary circuit assembly including a secondary  
8 winding of the power conversion transformer, and  
9 control circuitry for receiving control information  
10 useful in determining when to open and close the switch,  
11 the primary and secondary circuit assemblies being  
12 encapsulated as distinct components and held in proximity to  
13 one another to permit coupling between the primary and  
14 secondary windings of the power transformer via a permeable  
15 core, and to permit communication of the control information  
16 between the secondary circuit assembly and the primary  
17 circuit assembly.

1 16. The power converter of claim 15 wherein said  
2 control circuitry includes galvanically isolated components  
3 respectively in each of said circuit assemblies.

1 17. The power converter of claim 16 wherein said  
2 galvanically isolated components comprise windings and said  
3 control information is passed by electromagnetic coupling  
4 between them.

1 18. The power converter of claim 15 wherein said  
2 control circuitry includes elements for passing said control  
3 information by modulating a carrier.

1 19. The power converter of claim 17 wherein said  
2 coupling is achieved without a permeable core linking said  
3 windings.

1 20. The power converter of claim 17 further  
2 comprising a permeable core linking said windings.

1           21. The power converter apparatus of claim 17  
2 wherein said windings are formed on surfaces of separate  
3 circuit boards.

1           22. The power converter of claim 15 wherein said  
2 primary and secondary assemblies are enclosed respectively  
3 in mechanically separate protective housings.

1           23. The power converter of claim 22 wherein said  
2 protective housing comprises a dielectric encapsulant.

1           24. The power converter of claim 22 wherein the  
2 housings of the assemblies meet at respective mating  
3 surfaces and coupling occurs across the mating surfaces.

1           25. Isolation apparatus for transferring control  
2 information between primary-side and secondary-side  
3 circuitry in a power converter, said isolation apparatus  
4 comprising

5           first communication circuitry for electronically  
6 modulating a carrier signal with said control information,

7           first and second galvanically isolated communicators  
8 for sending and receiving said carrier signal between said  
9 primary-side and secondary-side circuitries, and

10          second communication circuitry which, in response to  
11 a signal delivered by said second communicator, generates an  
12 electrical signal corresponding to said control information.

1           26. The isolation apparatus of claim 25 wherein  
2 said carrier signal comprises a high-frequency electrical  
3 oscillation.

1           27. The isolation apparatus of claim 25 wherein  
2 said first and second communicators comprise conductive  
3 windings.

1           28. The isolation apparatus of claim 27 wherein  
2 coupling between said windings is achieved without a  
3 permeable core linking said windings.

